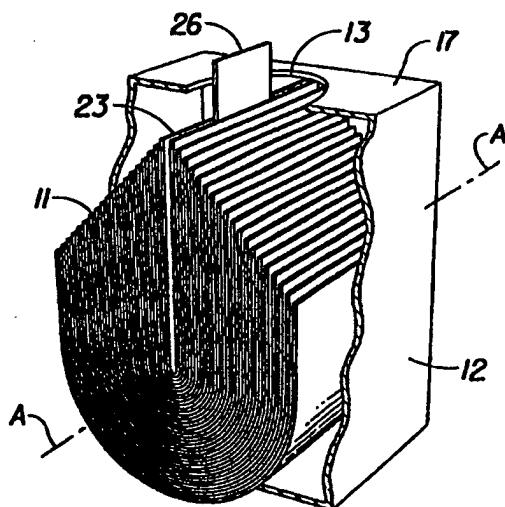


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<p>(21) International Application Number: <b>PCT/US97/22693</b></p> <p>(22) International Filing Date: <b>12 December 1997 (12.12.97)</b></p> <p>(30) Priority Data: 08/774,451 30 December 1996 (30.12.96) US</p> <p>(71) Applicant: <b>THE PROCTER &amp; GAMBLE COMPANY [US/US]; One Procter &amp; Gamble Plaza, Cincinnati, OH 45202 (US).</b></p> <p>(72) Inventors: <b>BREWER, Richard, Allen; 6521 Visitation Drive, Cincinnati, OH 45248 (US). GRISCIK, Michael, Paul; 513 Chisolm Trail, Wyoming, OH 45215 (US).</b></p> <p>(74) Agents: <b>REED, T., David et al.; The Procter &amp; Gamble Company, 5299 Spring Grove Avenue, Cincinnati, OH 45217 (US).</b></p>		<p>(81) Designated States: <b>AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).</b></p> <p>Published <i>With international search report.</i></p>	
<p>(54) Title: <b>CENTER PULL TISSUE DISPENSING</b></p> <p>(57) Abstract</p> <p>A plurality of separably joined tissues (11) provided as a clip. The tissues are folded about an axis into a U-shaped configuration. The tissues are dispensed in succession by removing the inner or center tissue (23) from the clip. The invention also comprises a tissue package which includes a plurality of U-folded tissues and a tissue dispenser (12) suitable for dispensing the clip of tissues.</p> 			

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## CENTER PULL TISSUE DISPENSING

### FIELD OF THE INVENTION

This invention relates to sequential tissue dispensing, wherein a plurality of discrete U-folded tissues is sequentially dispensed by pulling the innermost tissue through an aperture.

### BACKGROUND OF THE INVENTION

Inverted U-folded tissue clips, well known in the art, are useful for pop-up dispensing. This configuration provides pop-up convenience and smaller footprint dispensers then occur with reach-in dispensers, as illustrated by U.S. Pat. No. 3,369,700 issued to Nelson on February 20, 1968; U.S. Pat. No. 3,456,844 issued to Planner on July 22, 1969; and commonly assigned U.S. Pat No. 3,881,632 issued to Early et al. on May 6, 1975. Each of these teaches an inverted U-folded configuration where the tissues are dispensed by removing the outermost tissue through an aperture.

Each of these teachings suffers from the same drawback. Dispensing the outermost tissue first from a U-folded clip commonly results in the tearing of the first few sheets pulled from the tissue clip. This tearing stems from the undue start-up force requirement necessary to dispense the first few sheets in the clip.

Commonly assigned U.S. Pat. No. 4,623,074 issued to Dearwester on November 18, 1986 and incorporated herein by reference, teaches pop-up or alternatively reach-in dispensing of flat tissues. The main drawback of this teaching is a larger than desirable footprint.

The present invention overcomes these drawbacks while still utilizing the well known U-folded tissue clip configuration. By utilizing the U-folded clip according to the present invention, the center or inner tissue is dispensed first rather than the outermost tissue, as shown by the prior art. With the present invention, the removal force required to remove tissues from the clip is reduced. As a result, the number of tissues contained within a single dispenser, can be increased, thereby reducing wasted dispenser volume. Alternatively, with the present invention a smaller footprint dispenser can be utilized.

Another benefit of the present invention is less sheet tearing for a given sheet count to package volume ratio. Thus, ease of use is improved.

### SUMMARY OF THE INVENTION

This invention comprises a plurality of separably joined tissues provided as a clip. The clip of tissues has an inner tissue and an outer tissue. The tissues are folded about an axis into a U-shaped configuration. The tissues are dispensed in succession by removing the inner tissue from the clip.

In order to facilitate removal of the tissues from the clip, a pull tab may be attached to the inner tissue. Alternatively, the inner tissue may be of a different color or contain indicia which differentiate it from the balance of the tissues in the clip. Other options to facilitate removal include, having the free end of the inner tissue extend beyond the free ends of the tissues in the balance of the clip. This may be accomplished by providing an inner tissue with a longer longitudinal length than the other tissues in the clip or alternatively, one longitudinal free end of the inner tissue may be offset so that one of its free ends extends beyond the free ends of the rest of the clip.

The invention also comprises a tissue package which includes a plurality of U-folded tissues and a tissue dispenser suitable for dispensing the clip of tissues. The tissue dispenser may optionally include an aperture through which the tissues are dispensed. Additionally, the cross sectional area of the aperture may be less than the cross sectional area of the tissue.

Additionally, the invention comprises a process for sequentially dispensing tissues. The process entails providing a clip of separably joined tissues which are folded to provide an inner tissue. The process also includes providing a dispenser with an aperture in which the clip of tissues are placed and then subsequently removing the tissues by withdrawing the inner tissue of the clip through the aperture.

### BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view showing a dispenser and tissue to be dispensed according to the present invention.

FIG. 2 is a perspective view showing a dispenser partially in cutaway illustrating U-folded tissues and the optional pull tab.

FIG. 3 is a perspective view of an alternate embodiment of the present invention having a recloseable flap which covers the aperture.

FIG. 4 is a side elevational view of a clip of tissues having an elongated inner tissue.

FIG. 5 is a side elevational view of a clip of tissues wherein the inner tissue is offset so that one free end of the inner tissue extends beyond the free ends of the tissues comprising the balance of the tissues in the clip.

FIG. 6 is a graphical representation depicting the pull force required to remove conventionally dried facial tissues sold by the Assignee from a dispenser according to the prior art in comparison to a dispenser according to the present invention.

FIG. 7 is a graphical representation depicting the pull force required to remove through air dried facial tissues sold by the Assignee from a dispenser according to the prior art in comparison to a dispenser according to the present invention.

#### DETAILED DESCRIPTION OF THE INVENTION

Referring to FIG. 1, the present invention teaches a tissue package comprising a plurality of separably joined tissues 11 suitable for pop-up dispensing and a dispenser 12 for dispensing the tissues 11. The separably joined tissues 11 are provided within a unit as a clip and disposed within the dispenser 12. The inner or center tissue 23 is dispensed first from the clip.

Suitable tissues 11 may be made according to commonly assigned U.S. Pat. No. 4,191,609 issued March 4, 1980 to Trokhan, or commonly assigned U.S. Pat. No. 5,332,118 issued July 26, 1994 to Muckenfuhs, the disclosures of which are incorporated herein by reference for the purpose of showing how to make tissues 11 suitable for use with the present invention. Though the principle use of this invention is in connection with facial tissues 11, the invention is also applicable to other paper products including but not limited to: bath tissue, towelling, wipes, and cotton pads. The tissues 11 may either be wetted or dry and may either be composed of materials which are cellulosic, noncellulosic, nonwovens or a combination thereof.

Referring to FIG. 2, each tissue 11 is separably joined to both adjacent tissues 11 by any releasable attachment means which allows easy separation to occur as the tissue 11 is being dispensed or after the tissue 11 is withdrawn through the aperture 13. "Releasably attached" means each tissue 11 is easily separated from adjacent tissues 11, and may include releasable attachment means, such as friction, cohesion or other forces which releasably attach adjacent tissues 11. The releasable attachment means may be accomplished in any number of ways as described in

commonly assigned U.S. Pat. No. 5,520,308 issued on May 28, 1996 to Berg, Jr. et al. and commonly assigned U.S. Pat. No. 5,516,001 issued to Muckenfuhs et al. on May 14, 1996, both of which are incorporated herein by reference. Examples of releasable attachment means include but are not limited to: adhesively attaching the tissue 11 to the adjoining tissues 11 or by a perforation connecting adjacent tissues 11 or most preferably by interleaving or interfolding the tissues 11 contained within the clip. Interleaving or interfolding patterns, well known in the art, include but are not limited to the C-fold, V-fold and Z-fold patterns. Any one of these or other patterns may be used for the present invention.

The separably joined tissues 11 are U-folded about an axis A-A. The axis A-A may intercept the aperture 13. The tissues 11 are then dispensed from the center of the clip. The innermost tissue 23 is dispensed first. The remaining tissues 11 are then dispensed, in sequence, from the center of the clip.

In dispensing tissues 11 from the dispenser 12 according to both the prior art and the present invention, the aperture 13 through which the tissues 11 are dispensed is typically disposed on top of the dispenser 13. The clip of tissues 11 according to the prior art was oriented in an inverted U-shaped configuration, with the free ends of the tissue 11 oriented downwardly and away from the aperture 13. According to the present invention, the free ends of the tissues 11 are oriented towards the aperture 13. In this arrangement the clip of tissues 11 is generally oriented in a U-shaped configuration as opposed to the inverted U of the prior art.

Two pull-tests (i.e., pop-up dispensing of one tissue at a time) were conducted. The first test was conducted on a conventionally dried facial tissue sold by the Assignee as Puffs Soft & Strong (Puffs is a registered trademark of The Procter & Gamble Company). The second test was conducted on a through air dried facial tissue sold by the Assignee as Puffs Advanced Extra Strength (Puffs is a registered trademark of The Procter & Gamble Company). Two dispensers 12 of each type facial tissue 11 product were utilized in each test, for a total of four dispensers 12. The first test utilized two dispensers 12, each having a 96 sheet count. The second test utilized two dispensers 12, each having a 64 sheet count. The same volume was used for all four dispensers 12.

The tissues 11 in the first dispenser 12 of each type of product (Samples A and C), were arranged according to the prior art (and as

commercially provided) wherein the outermost tissue 11 from the inverted U-shaped clip is dispensed first. The tissues 11 in the second dispenser 12 of each type of product (Samples B and D), were arranged according to the present invention wherein the innermost or center tissue 23 is dispensed first from the U-shaped clip. In each case the first tissue 11 was removed and discarded from the clip to prevent undue inconsistency from being introduced into the test.

An Instron Tensile Tester was utilized to measure the force required to remove the next six consecutive tissues 11 from each dispenser 12. Each dispenser 12 was positioned and locked at the base of the Instron into a prescribed location for dispenser 12 stability and alignment. The second tissue 11 in the clip of each dispenser 12 was hand-started so as to expose one of its free ends. The second tissue 11 in each dispenser 12 was hand-started in order to improve consistency between the present invention and the prior art. The exposed free end of the second tissue 11 was then inserted into the jaws of the Instron and the force required to dispense this tissue 11 measured. For tissues 11 Nos. 3-7 of each dispenser 12, the Instron was attached to the tissue 11 exposed by the previous pull. This procedure was repeated for each dispenser 12. The results are tabulated in Tables 1 and 2 and are graphically depicted in FIGS. 6-7 respectively.

**TABLE 1**  
**Test 1 - Conventionally Dried Facial Tissue**

<u>TISSUE</u>	<u>SAMPLE A</u>	<u>SAMPLE B</u>
#2	173.3	140.7
#3	161.2	171.2
#4	166.7	141.3
#5	190.2	135.1
#6	207.1	96.3
#7	126.9	79.9

**TABLE 2**  
**Test 2 - Through Air Dried Facial Tissues**

<u>TISSUE</u>	<u>SAMPLE C</u>	<u>SAMPLE D</u>
#2	575	350.6
#3	514.1	427.5
#4	286.5	422.9
#5	385.5	346.2
#6	219.5	277.8
#7	244.6	250.9

Samples A and C represent the prior art while Samples B and D represent the present invention. In the case of Sample C, recorded in Table 2, tissue No. 2 tore. The 575 grams of force is the last reading recorded by the Instron just prior to the tearing of tissue No. 2. While not intending to limit the present invention by drawing conclusions from the test data, it is clear that in the case of Samples B and D according to the present invention, with the exception of tissue No. 2, a stepwise decrease in the force required to remove each subsequent tissue 11 from the dispenser 13 is observed. In the case of Samples A and C according to the prior art, there is no corresponding stepwise decrease.

To facilitate removal of the center or inner tissue 23 from a clip being utilized for the first time, this first tissue 23 may have one free end which extends beyond the free ends of the balance of the tissues 11 in the clip. As illustrated in FIG. 4, this first tissue 23 may have a first length which wraps the axis A-A. The length of this first tissue 23 may be longer than the rest of the tissues 11 in the clip.

Alternatively, as illustrated in FIG. 5, this first tissue 23 may be offset in the clip so that its free ends are asymmetrically disposed about the axis A-A. Thus, one free end of this tissue 23 extends beyond the free ends of the rest of the tissues 11 in the clip.

Another alternate means includes, utilizing indicia on the first tissue 23 in the clip which comprises a contrasting color to that of the rest of the tissues 11 in the clip. Alternatively, the color of the entire first inner tissue 23 in the clip can be different from the color of the rest of the tissues 11 in the clip.

Most preferably, this first tissue 23 may have a pull tab 26 attached to it as illustrated in FIG. 2. The pull tab 26 would extend beyond the free ends of the clip of tissues 11 so that it can easily be grasped by a use.

Suitable dispensers 12 may be made according to commonly assigned U.S. Pat. No. 5,507,130 issued April 16, 1996 to Young et al. and commonly assigned U.S. Pat. No. 5,516,001 issued May 14, 1996 to Muckenfuhs et al., the disclosures of which are incorporated herein by reference. Referring back to FIG. 1, the dispenser 12 may have rigid or flaccid walls 17 and be generally parallelepiped shaped. The dispenser 12 preferably has at least one generally planar wall 17 with an aperture 13

therein. The aperture 13 preferably intercepts the top of the dispenser 12 as noted above.

In an alternate embodiment shown in FIG. 3, the aperture 13 can intercept the side of the dispenser 12. The aperture 13 illustrated by the dispenser 12 of FIG. 3, intercepts the entirety of one side of the dispenser 12. The clip of tissues 11 in the embodiment of FIG. 3 are U-folded about axis A-A, as described above. However, the tissues 11 of FIG. 3 can also be dispensed sideways, parallel to axis A-A, rather than perpendicular to this axis A-A, as taught by the prior art or as described in FIGS. 1-2 above. When the tissues 11 of FIG. 3 are dispensed sideways, the aperture 13 of the dispenser 12 is disposed on a wall parallel to the axis A-A. This arrangement provides the advantage of additional flexibility in selection of the footprint of the dispenser 12. As in the embodiments of FIGS. 1-2 above, the inner tissue 23 is also dispensed first in the embodiment of FIG. 3.

In yet another embodiment (not shown), the tissues 11 may be wound in a spiral pattern, rather than U-folded. Such a pattern is illustrated by commonly assigned U.S. Pat. No. 5,242,057 issued September 7, 1993 to Cook et al., the disclosure of which is incorporated by reference. In the spiral pattern, the inner or center tissue 11 is once again dispensed first from the clip.

While particular embodiments of the present invention have been illustrated and described, it would be obvious to those skilled in the art that various other changes and modifications can be made without departing from the spirit and scope of the invention. It is therefore intended to cover in the appended claims all such changes and modifications that are within the scope of this invention.

5 WHAT IS CLAIMED IS:

1. A clip of tissues suitable for pop-up dispensing, said clip comprising:
  - [a] a plurality of separably joined tissues
  - [b] said plurality of tissues being folded about an axis to form a U-shaped clip of said tissues, said clip having an inner tissue and an outer tissue
  - [c] said tissues being dispensable in succession by removing said inner tissue from said clip.
- 15 2. A clip of tissues as recited in Claim 1 further comprising a pull tab joined to said inner tissue, said pull tab extending outwardly past said clip of tissues to be grasped by a user.
- 20 3. A clip of tissues as recited in Claim 1, having an indicium on the first said inner tissue in said clip and wherein said indicium comprises a contrasting color to that of said clip, and preferably said inner tissue has a first color covering the entirety of the first said inner tissue in a new clip and wherein the balance of said tissues in said clip are comprised of a second color that is different from that of said first color.
- 25 4. A clip of tissues as recited in Claims 1, 2, and 3 wherein said clip is folded to provide each tissue with two free ends oppositely disposed about said axis, and wherein one free end of the first said inner tissue in a new clip extends beyond the free ends of the balance of said tissue in said clip and preferably said inner tissue is folded to provide two free ends asymmetrically oppositely disposed about said axis and where the balance of said tissues in said clip are folded about said axis so as to provide two free ends symmetrically disposed about said axis..
- 35 5. A clip of tissues according to Claims 1, 3, and 4, wherein said inner tissue has a first length, said first length being perpendicular to said axis and wherein the balance of the tissues in said clip have a second length, said second length being perpendicular to said axis and wherein said second length is less than said first length.
- 40 6. A tissue package comprising:

- 5 [a] a dispenser and a plurality of tissues contained therein  
[b] said dispenser containing said tissues and having an aperture therethrough, said plurality of tissues being separably joined and folded about an axis to form a U-shaped clip of said tissues, said clip having an inner tissue and an outer tissue, said tissues being dispensable through said aperture by withdrawing said inner tissue from said clip, and preferably said aperture has a cross sectional area less than the projected area of said clip and more preferably said tissue package has rigid walls and said aperture on one of said walls is intercepted by said axis.
- 10
- 15 7. A tissue package containing a clip of tissues according to Claims 1, 2, 3, 4, 5 and 6 wherein said tissue package has rigid walls and wherein said aperture is disposed on one of said walls, said one of said walls having said aperture being parallel to said axis.
- 20 8. A process for sequentially dispensing tissues, said process comprising the steps of:  
[a] providing a clip of separably joined tissues  
[b] U-folding said clip of tissues about an axis to provide an inner tissue and free ends of said tissues  
25 [c] providing a dispenser having an aperture therethrough  
[d] disposing said clip of tissues in said dispenser  
[e] removing said inner tissue from said clip through said aperture and preferably said free ends being oriented  
30 towards said aperture.
9. The process according to Claim 8, wherein said axis intercepts said aperture.
- 35 10. A process for sequentially dispensing tissues, said process comprising the steps of:  
[a] providing a clip of separably joined tissues wherein said separably joined tissues are perforated and folded in a spiral pattern  
40 [b] folding said clip of tissues to provide an inner tissue  
[c] providing a dispenser having an aperture therethrough  
[d] disposing said clip of tissues in said dispenser  
[e] removing said inner tissue from said clip through said aperture.

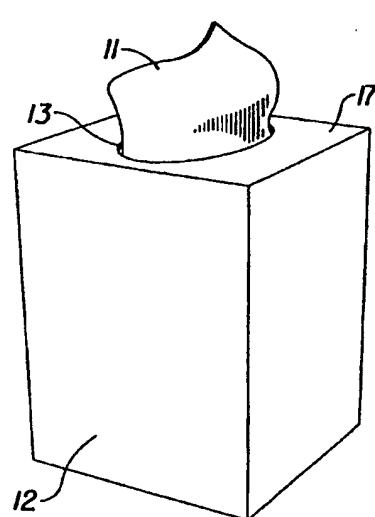


Fig. 1

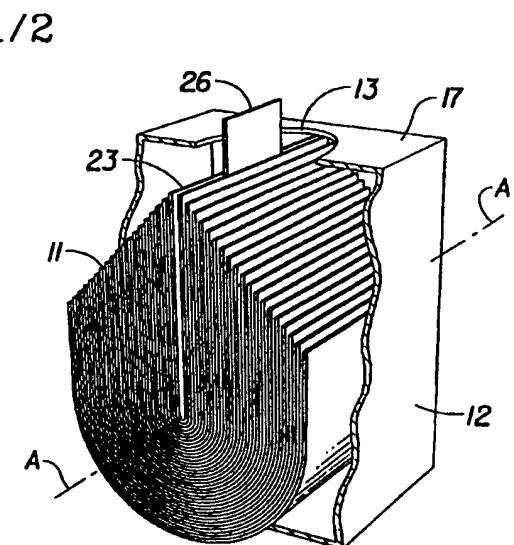


Fig. 2

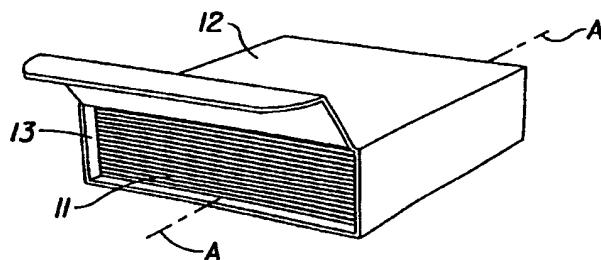


Fig. 3

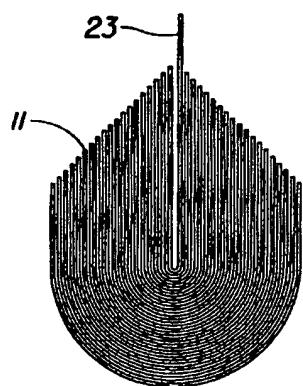


Fig. 4

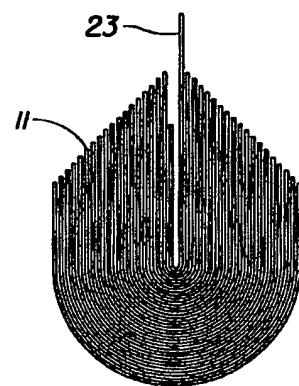


Fig. 5

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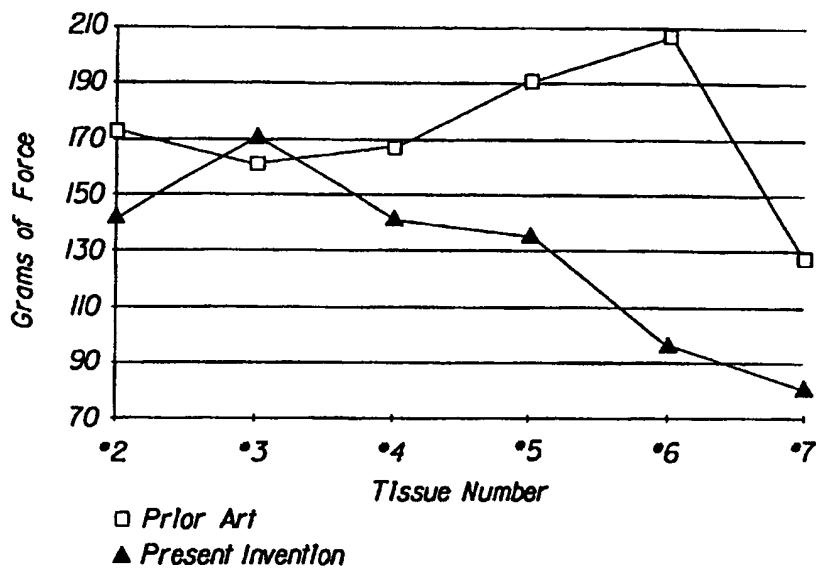


Fig. 6

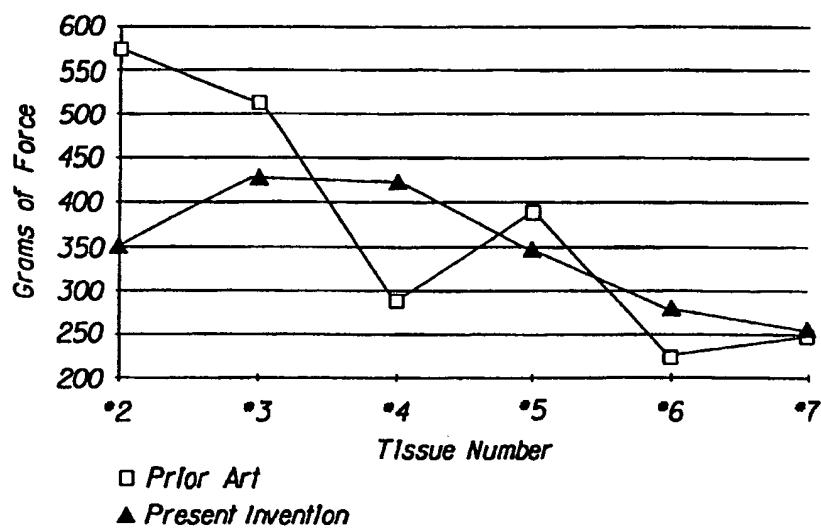


Fig. 7

# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/US 97/22693

**A. CLASSIFICATION OF SUBJECT MATTER**  
IPC 6 A47K10/42 B65D83/08

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)  
IPC 6 A47K B65D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2 656 916 A (HENDERSON) 27 October 1953	1,2,6,8, 9
Y	see the whole document	10
A	-----	4,5,7
Y	GB 401 960 A (RESNATI) 6 April 1933	10
	see the whole document	-----
X	US 1 748 846 A (MCCOLL) 25 February 1930	1,6,8
A	see the whole document	4,5,7
X	US 3 090 522 A (HOHWART) 21 May 1963	1
A	see the whole document	4-6,8
X	US 2 611 482 A (NELSON) 23 September 1952	1
	see the whole document	-----

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Patent family members are listed in annex.

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1

Date of the actual completion of the international search  30 March 1998	Date of mailing of the international search report  07/04/1998
Name and mailing address of the ISA  European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl. Fax: (+31-70) 340-3016	Authorized officer  Vrugt, S

**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International Application No  
PCT/US 97/22693

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2656916 A	27-10-53	NONE	
GB 401960 A		NONE	
US 1748846 A	25-02-30	NONE	
US 3090522 A	21-05-63	NONE	
US 2611482 A	23-09-52	NONE	